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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,507	02/05/2004	Taejoon Kwon	YPL-0080	6812

23413 7590 06/28/2007

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EXAMINER	
ZHOU, SHUBO	
ART UNIT	**PAPER NUMBER**
1631	
MAIL DATE	**DELIVERY MODE**
06/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/773,507	KWON, TAEJOON	
	Examiner	Art Unit	
	Shubo (Joe) Zhou	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/4/07, 12/28/06*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 December 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: Raw Sequence Listing Error Report.

DETAILED ACTION

Applicant's amendments and request for reconsideration filed 12/28/06 and 4/4/07 are acknowledged and the amendments have been entered.

Sequence Rules Compliance

The computer readable form of the sequence listing filed 4/4/07 is still defective. See the attached "Raw Sequence Listing Error Report."

Applicants are given the same response time regarding this failure to comply as that set forth to respond to this office action including providing a computer readable form of the Sequence Listing and a new statement under 37 CFR 1.821(f). Failure to comply with these requirements may result in ABANDONMENT of the application under 37 CFR 1.821(g).

Withdrawn Rejections/Objections

The objection to the specification for reasons set forth in the previous Office action mailed 9/28/06 is hereby withdrawn in view of applicant's argument and the amendment filed 12/28/06.

The rejection of Claims 1-12 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention for reasons set forth in the previous Office action mailed 9/28/06 are hereby withdrawn in view of the amendments to the claims filed 12/28/06. However, the claims are still rejected for reasons set forth in the respective sections below.

Specification

The specification is objected to because of the following:

The title is not descriptive. The amended claims are drawn to a method, system or computer program for determining a location of a target sequence in a genome sequence. The current title, however, is directed to "System and Method for Designing Probes using Heterogeneous Genetic Information, and Computer Readable Medium." A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections-35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-12 and newly added 13-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

This rejection is reiterated from the previous Office action mailed 9/28/06 for claims 1-12 and newly added for new claims 13-14 for the same reasons set forth for claims 1-11 in the previous Office action.

Applicant's arguments filed 12/28/06 have been fully considered but they are not found persuasive.

Applicant's argument with respect to claims 1-6 is on the ground that the claimed invention is an apparatus and thus is statutory. With respect to claims 7-11, the argumetn is on

the ground that the claimed invention manipulate sequence of nucleic acids which is not an abstract concept or idea, and provides a useful, concrete and tangible results and thus is a practical application. These are not found persuasive. Not all apparatus are statutory just as not all processes are statutory. In the instant case, since the claimed method of claims 7-11 is nonstatutory for not producing a tangible result, the apparatus that is designed only to performs such a method is also nonstatutory because it also does not produce a useful, concrete and tangible results. With regards to claims 7-11, it should be pointed out that in the previous Office action mailed 9/28/06, it is particularly focused on the claimed process not producing a tangible result. Applicant fails to specifically address this point. Given that the process of manipulating intangible sequence data could be entirely performed in a computer, the final result obtained is also data converted from the input data. Such obtained data is also intangible unless it is outputted or displayed or stored in a computer for a user to use to realize whatever functionality the claimed process is intended.

With regard to claim 12, the claim is amended to recite "a computer program for the method of ... claim 7." Since the amendment deleted all the steps of the method the program was to execute, it is not clear what method process the program in the amended claim is to execute. Even though the claim now recites a program "for" the method of claim 7, it does not necessarily mean the program is to execute the entire process of claim 7, but at least one embodiment could be simply for part of the process such as to execute a step, e.g. inputting a target sequence in claim 7. Thus, at least one embodiment of claim 12 does not seem to produce a useful, concrete and tangible result.

With regard to claim 14, although the claim recites "displaying the location of the target sequence in the genome sequence," for reasons set forth below, given the context, it is not clear where the location of the target sequence is displayed. It could be simply displayed "in the genome sequence" as recited in the claim. Thus, at least one embodiment of the claimed invention does not produce a tangible result.

Claim Rejections-35 USC § 112

The following is a quotation of the **first** paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This rejection is newly applied which is necessitated by applicant's amendments.

Claims 1, 7 and their dependent claims are amended to recite "a record for a sequence information for each version of a genome sequence comprising the sequence information." The limitation is considerably broad in that it includes every version of any genome sequence of any organisms published in any place or any database or any website or unpublished, given the indefiniteness of the claims set forth in the respective section below. While the specification refers version 1 and version 2 of a genome sequence on pages 6-7, it does not provide adequate

description for a crosslink map comprising every version of a genome sequence of every organism. Thus limitation is thus considered as new matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This rejection is newly applied which is necessitated by applicant's amendments.

Amended claim 1 recites "each version of a genome sequence." The metes and bounds of the limitation are not clear because it is unclear what is precisely meant by "each version." Does it mean the different versions of a genome sequence made public in the database of GenBank or it can be any databases, private or public. Does it include different versions of a genome sequence in published articles? Also, it is not clear as to what is considered as a version of a genome sequence. Does each different mutation of a particular gene in a genome represent a different version of the genome? Does a genome sequence produced by a transgenic method represent a different version of the genome?

Newly added claim 13 is rejected for the same reason for reciting "the most recent version of the genome sequence." Furthermore, it is unclear as to whom, when and where that "most recent" is determined.

Claim 7 and its dependent claims are also rejected for comprising the same limitation for the same reasons.

Amended claim 1 recites "the records in the crosslink map" in the "information search unit." The phrase lacks clear antecedent basis because there is prior reference to "records" but only "a record."

Claim 1 in line 13 recites "a reference sequence information." It is not clear whether this has to be the same "reference sequence information" referenced earlier in the claim, or it can be any reference sequence information in the reference group. If it is the former, it is suggested that the word "the" be used instead of "a."

Claim 1 in lines 14-15 recites "a genome sequence." It is not clear whether this has to be the same "genome sequence" referenced earlier in the claim, or it can be any genome sequence. If it is the former, it is suggested that the word "the" be used instead of "a."

Claim 7 and its dependent claims are also rejected for comprising the same limitation for the same reasons.

Claim 4 recites "therein the location estimation unit determines the location of the target sequence by assigning a higher priority to the calculated difference value for a reference sequence information represented in the crosslink map by a larger number of records." The metes and bounds of the limitation are not clear. Firstly, it is not clear what is meant by "higher priority to a ... value." And it is not clear as to what it is higher than. Secondly, it is not clear what is meant by a "larger number of records," and it is not clear as to what it is larger than.

Claim 9 is also rejected for comprising the same limitation for the same reasons.

Claim 5 in lines 6-7 recites "based on the calculated difference value." The phrase lacks clear antecedent basis because there were prior references to a calculated difference value for "a reference sequence" and a calculated difference value for "sequence information ... excluded from the reference group." It is thus unclear which one is referred to by "the calculated difference value" in lines 6-7.

Claim 12 is amended to recite "a computer program for the method of ... claim 7." It is not clear what method process the program in the amended claim is to execute. Even though the claim now recites a program "for" the method of claim 7, it could mean that the program is to execute the entire process of claim 7, but it could mean that the program is simply for part of the process. If it is the latter, it is not clear which part of the process of claim 7 the program is "for."

Claim 14 recites "displaying the location of the target sequence in the genome sequence." The metes and bounds of the limitation are not clear because it is not clear where the display takes place. It could mean that the location is simply displayed "in the genome sequence" or displayed on a computer screen or interface for a user.

Clarification of the metes and bounds of the claims is requested.

Conclusion

No claim is allowed.

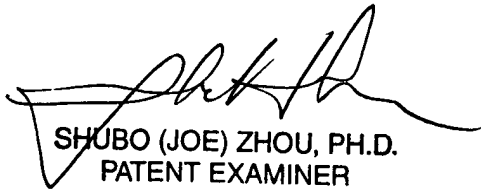
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a).

Applicants are reminded of the extension of time policy as set forth in 37 C.F.R. §1.136 (a). A shortened statutory period for response to this final action is set to expire three months from the date of this action. In the event a first response is filed within two months of the mailing date of this final action and the advisory action is not mailed until after the end of the three-month shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 C.F.R. §1.136 (a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than six months from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shubo (Joe) Zhou, whose telephone number is 571-272-0724. The examiner can normally be reached Monday-Friday from 8 A.M. to 4 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, Ph.D., can be reached on 571-272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

sz/SZ



STIC Biotechnology Systems Branch

EFS

RAW SEQUENCE LISTING ERROR REPORT

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 10/773,507A
Source: IFW16
Date Processed by STIC: 4/6/07

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.
PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:
1) **INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,**
2) **TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY**

FOR CRF SUBMISSION AND PATENTIN SOFTWARE QUESTIONS, PLEASE CONTACT MARK SPENCER, TELEPHONE: 571-272-2510; FAX: 571-273-0221

TO **REDUCE** ERRORED SEQUENCE LISTINGS, **PLEASE** USE THE **CHECKER VERSION 4.4.0 PROGRAM**, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:
http://www.uspto.gov/web/offices/pac/checker/chkrnote.htm

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail.
Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom.
Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<http://www.uspto.gov/ebc/efs/downloads/documents.htm>, **EFS Submission User Manual** - ePAVE)
2. **U.S. Postal Service:** Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
3. **Hand Carry, Federal Express, United Parcel Service, or other delivery service (EFFECTIVE 01/14/05):** U.S. Patent and Trademark Office, Mail Stop Sequence, Customer Window, Randolph Building, 401 Dulany Street, Alexandria, VA 22314

Revised 01/10/06

Raw Sequence Listing Error Summary

ERROR DETECTED **SUGGESTED CORRECTION** **SERIAL NUMBER:** 10/773,507A

ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE

1	Wrapped Nucleics Wrapped Aminos	The number/text at the end of each line "wrapped" down to the next line. This may occur if your file was retrieved in a word processor after creating it. Please adjust your right margin to .3; this will prevent "wrapping."
2	Invalid Line Length	The rules require that a line **not exceed** 72 characters in length. This includes white spaces.
3	Misaligned Amino Numbering	The numbering under each 5th amino acid is misaligned. Do **not** use tab codes between numbers; use **space characters**, instead.
4	Non-ASCII	The submitted file was **not** saved in ASCII(DOS) text, as **required** by the Sequence Rules. **Please ensure your subsequent submission is saved in ASCII text.**
5	Variable Length	Sequence(s)____contain n's or Xaa's representing more than one residue. **Per Sequence Rules, each n or Xaa can only represent a single residue.** Please present the **maximum** number of each residue having variable length and indicate in the <220>-<223> section that some may be missing.
6	PatentIn 2.0 "bug"	A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequences(s) _____. Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. **This applies to the mandatory <220>-<223> sections for Artificial or Unknown sequences.**
7	Skipped Sequences (OLD RULES)	Sequence(s) _____ missing. If intentional, please insert the following lines for **each** skipped sequence: (2) INFORMATION FOR SEQ ID NO:X: (insert SEQ ID NO where "X" is shown) (i) SEQUENCE CHARACTERISTICS: (Do not insert any subheadings under this heading) (xi) SEQUENCE DESCRIPTION:SEQ ID NO:X: (insert SEQ ID NO where "X" is shown) This sequence is intentionally skipped Please also adjust the "(ii) NUMBER OF SEQUENCES:" response to **include** the skipped sequences.
8	Skipped Sequences (NEW RULES)	Sequence(s) _____ missing. **If intentional**, please insert the following lines for **each** skipped sequence. <210> sequence id number <400> sequence id number 000
9	Use of n's or Xaa's (NEW RULES)	Use of n's and/or Xaa's have been detected in the Sequence Listing. Per 1.823 of Sequence Rules, use of <220>-<223> is MANDATORY if n's or Xaa's are present. In <220> to <223> section, please explain location of **n** or **Xaa**, and which residue **n** or **Xaa** represents.
10	Invalid <213> Response	Per 1.823 of Sequence Rules, the only **valid** <213> responses are: Unknown, Artificial Sequence, or scientific name (Genus/species). <220>-<223> section is **required** when <213> response is Unknown or is Artificial Sequence. (see item 11 below)
11	Use of <220>	Sequence(s) ____ missing the <220> "Feature" and associated numeric identifiers and responses. Use of <220> to <223> is MANDATORY if <213> "Organism" response is "Artificial Sequence" or "Unknown." Please explain source of genetic material in <220> to <223> section or use "chemically synthesized" as explanation. (See "Federal Register," 06/01/1998, Vol. 63, No. 104, pp. 29631-32), also Sec. 1.823 of Sequence Rules
12	PatentIn 2.0 "bug"	Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing). Instead, please use "File Manager" or any other manual means to copy file to floppy disk.
13	Misuse of n/Xaa	"n" can only represent a single nucleotide; "Xaa" can only represent a single amino acid

IFW16

RAW SEQUENCE LISTING DATE: 04/06/2007
PATENT APPLICATION: **US/10/773,507A** TIME: 12:58:22

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      4       genetic information, and computer readable medium
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C-->  8 <141> CURRENT FILING DATE: 2004-02-05
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     18 <223> OTHER INFORMATION: Artificial construct
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     36 <400> SEQUENCE: 2
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     39 c                                                                    61
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Does Not Comply
Corrected Diskette Needed

what is the source?
Please see item 11 on Error Summary Sheet

same error

VERIFICATION SUMMARY DATE: 04/06/2007
PATENT APPLICATION: **US/10/773,507A** TIME: 12:58:23

Input Set : **N:\EFS\04_06_07\10773507a_efs\PX018670US_SEQ_substituted.txt**
Output Set: **N:\CRF4\04062007\J773507A.raw**

L:8 M:270 C: Current Application Number differs, Replaced Current Application No
L:8 M:271 C: Current Filing Date differs, Replaced Current Filing Date